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Disclaimer

Abstract

The focus of this project is to demonstrate the effectiveness of Amended Silicates™ sorbents as a mercury control technology for coal-fired power plants. The demonstration will be conducted at Cinergy's Miami Fort Unit 6 for a period of six weeks under typical plant operating conditions. Several trial campaigns will be completed: a parametric series of injection rates for the Amended Silicates sorbent to characterize its performance at the host site, a parametric series of injection rates for powdered activated carbon to use as a basis of comparison, and an extended period (30 days) over which Amended Silicates sorbent is injected to evaluate long-term performance of the technology in an operating power plant, including impact on balance of plant equipment. Samples of the host unit fly ash mixed with Amended Silicates sorbent will be extracted for testing as a cement replacement. A unique feature of the Amended Silicates sorbent is that its addition to a flue gas stream does not affect the salability of the collected fly ash plus sorbent as a pozzolan additive.

In this third quarter of the project, activities focused on finalizing the Quality Assurance/Quality Control document for the field demonstration and negotiating a partnership agreement with a major materials science company to manufacture the Amended Silicate sorbent for the full-scale demonstration. Amended Silicates, LLC put on place the subcontract with the Western Kentucky University Research Foundation to provide Ontario-Hydro wet chemistry sampling to measure vapor-phase mercury levels in the host unit flue gas and provide EPA-certified validation data to the mercury continuous emissions monitors to be installed and operated by the University of North Dakota Energy and Environmental Research Center. The project team also reviewed the test plan and spreadsheets used for a short-term trial of the Amended Silicates sorbent at an operating power plant in Colorado to confirm design parameters and operating protocols that can be applied for numerous project activities.

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Executive Summary

The Amended Silicates™ sorbent technology is a mercury control material that is a direct replacement for activated carbon. Amended Silicates sorbent is a powdered material similar to carbon injected upstream of existing particulate control equipment for rapid and effective capture of vapor-phase mercury in the flue gas stream. This technology has been under development for the past two years with funding from the EPA and DOE, and has achieved success in demonstrating the sorbent at a pilot scale on a slipstream from a Colorado power plant. This demonstration of Amended Silicates™ sorbents will evaluate the use of injected particulate sorbents to control of mercury emissions from Cinergy's Miami Fort Unit 6 for a period of six weeks under various conditions. A consortium has been established to support the technical and financial requirements imposed by a long-term test of this technology. The consortium includes utilities with an interest in cost-effective mercury control technologies, mercury control technology suppliers (i.e., Amended Silicates, LLC and its parent companies); the University of North Dakota Energy and Environmental Research Center to lead the mercury measurement effort; a modeler to provide insight into the fluid mechanics of sorbent injection; with strong interest on the part of EPRI and the American Public Power Association.

The project has been defined in three stages: **preparation**, which incorporates all activities to prepare the host site for the demonstration, as well as the manufacture of 50-100 tons of Amended Silicate™ sorbent; **demonstration**, where a matrix of sorbent injection cases will be conducted; and **analysis**, during which all the collected data will be correlated, analyzed, and interpreted to provide quantitative information regarding the performance of the Amended Silicate™ sorbent at a commercial scale. ADA has established a series of milestones for these three stages as delineated in this report.

In this quarter, work consisted of tasks in the Preparation and Analysis phases of the project. Activities focused on finalizing the Quality Assurance/Quality Control (QA/QC) document for two mercury measurement methods and working on negotiations to establish a partnership with a company to manufacture the Amended Silicate sorbent for the demonstration.

Amended Silicates, LLC also recently completed an independently funded short-term trial of the injection of Amended Silicates sorbent at an operating power plant in Colorado. Amended Silicates, LLC intends to leverage the preparations for this trial as well as capitalize on results in the upcoming project activities associated with the Miami Fort 6 demonstration.

Introduction

Amended Silicates, LLC, has been awarded a project to demonstrate its Amended Silicates™ mercury removal sorbent technology in a full-scale trial at a coal fired power plant. The trial is to be hosted by Cinergy at a site in Ohio and funded in part by US Department of Energy's National Energy Technology Lab (NETL).

The Amended Silicate™ sorbent technology, a direct replacement for activated carbon, is a powdered sorbent injected upstream of existing particulate control equipment for rapid and effective capture of vapor-phase mercury in the flue gas stream. This technology has been under development for the past two years with funding from the EPA and DOE, and has achieved success in demonstrating the sorbent at a pilot scale on a slipstream from a Colorado power plant.

The Amended Silicate™ sorbents use silicate materials as substrate particles on which a chemical reagent with a strong affinity for mercury and mercury compounds is impregnated. Because of their physical construction, these silicates present extended surface area on each particle combined with an easily-generated particle size of a few microns. This configuration promotes maximum exposure of the chemical amendment to the mercury vapor present in the coal-fired flue gas stream. The base silicate materials typically sell for *4-8¢ per pound*, so they represent a very cost-effective sorbent material. In addition, because of their silicate content, they have been shown to allow the continued sale of fly ash as a pozzolan material. Tests completed by Boral Materials Technologies have indicated that there is no effect on fly ash use in concrete due to the addition of Amended Silicate™ sorbents, in dramatic contrast to the effect of powdered activated carbon injection.

To support EPA's announced intent to regulate the emissions of mercury from coal-fired power plants; NETL solicited proposals and recently has selected eight of those proposals for cost-shared projects to demonstrate mercury control concepts at a commercial scale. The objective of the program is to gather data to document the performance of mercury control technology alternatives when installed and operated at full-scale (100-MW) generating units. One of the selected proposals is for the demonstration of Amended Silicates™ sorbent technology.

This demonstration of Amended Silicate™ sorbents will evaluate the control of mercury emissions from Cinergy's Miami Fort Unit 6 for a period of six weeks under various conditions. A consortium is being established to support the technical and financial requirements imposed by a long-term test of this technology. The consortium will include utilities with an interest in cost-effective mercury control technologies, especially those that permit continued sale of fly ash as a pozzolan material; mercury control technology suppliers (i.e., Amended Silicates, LLC and its parent companies); an organization to lead the mercury measurement effort; a modeler to provide insight into the fluid mechanics of sorbent injection; and other interested parties. There is strong interest on the part of EPRI and the American Public Power Association in participating in the planned demonstration project.

Amended Silicates, LLC, is a joint venture company formed by ADA Technologies and CH2M HILL that is focused on the manufacture and sale of Amended Silicate™ sorbent. Recently, Amended Silicates, LLC has entered into negotiations with a major materials science company to manufacture the large quantities of Amended Silicate sorbent needed for the demonstration. The Amended Silicates team will lead the technical effort of the proposed project. Cinergy has offered its Miami Fort Unit 6 as a host site, and will provide on-site technical support during injection of the sorbent material. The mercury semi-continuous emissions monitors (SCEMS) will be provided by the University of North Dakota's Energy and Environmental Research Center (UNDEERC), and the Ontario-Hydro wet chemistry testing will be conducted by the University of Western Kentucky. Boral Materials Technologies will perform tests of the collected sorbent plus fly ash to assess the impact of the added sorbent on the use of fly ash as a concrete additive. The ability to continue to sell fly ash is believed to be one of the significant advantages of Amended Silicate™ sorbents in comparison to activated carbon.

Project Description

This trial demonstration project is intended to show the effectiveness of Amended Silicate™ sorbent as a mercury control technology, including the ability to maintain fly ash sales from plants implementing its use. The project will incorporate three sorbent injection campaigns: one where powdered activated carbon is injected for a base-comparison case, a second where Amended Silicates sorbent is injected to establish process parameters required to meet mercury control targets, and a third where Amended Silicate sorbent is injected for a contiguous period of 30 days to validate long-term consistent performance and to discover any impact on balance of plant operation.

There are two major objectives for the full-scale demonstration project. The first is to produce uniform and high-quality Amended Silicate™ sorbent in multi-ton quantities for use in the proposed testing. The second is to demonstrate the ability of Amended Silicate™ sorbent to control emissions of mercury from commercial coal-fired power plants over a typical range of operating conditions for an extended period of time. The data analyses will be extensive, and will include computation of mercury removal rates and the efficiency of Amended Silicate™ sorbents in these applications.

The project has been defined in three stages: **preparation**, which incorporates all activities to prepare the host site for the demonstration, as well as the manufacture of 50-100 tons of Amended Silicate™ sorbent; **demonstration**, where a matrix of sorbent injection cases will be conducted; and **analysis**, during which all the collected data will be correlated, analyzed, and interpreted to provide quantitative information regarding the performance of the Amended Silicate™ sorbent at a commercial scale.

There are specific activities to be carried out in each stage of the project, as described below.

Preparation

- Project planning, including placement of subcontracts with team members and negotiation of a host site agreement with Cinergy.
- Development of a project schedule that reflects availability of the site, subcontractors, and time needed to prepare a commercial quantity of Amended Silicate sorbent.
- Site preparation, including the selection of locations for flue gas sampling ports and sorbent injection ports, and for the installation of a sorbent injection system to supply sorbent to the injection lances.
- Completion of a computational fluid dynamics modeling study to evaluate options for the number and locations of sorbent injection lances.
- Acquisition of a leased sorbent injection skid, fabrication of injection lances, and installation of the full sorbent injection system.
- Transport and installation of the semi-continuous mercury emissions monitors upstream of sorbent injection and at the outlet to the Unit 6 electrostatic precipitator.
- Preparation of 50 tons of Amended Silicate sorbent for use in the trial. This activity includes selection of a toll processor (contract vendor) to manufacture the sorbent, and oversight by Amended Silicates, LLC to assure quality control and consistency of the final product.

Demonstration

In the demonstration phase a series of campaigns will be completed with different sorbents to characterize their performance in capture of mercury from the flue gas of Miami Fort Unit 6. Mercury CEMs will be operated throughout the demonstration phase to collect data on mercury concentrations upstream of sorbent injection and at the outlet of the ESP of the host unit. At four discrete times in the demonstration, Ontario-Hydro wet chemistry sampling will be performed as a check against the mercury CEMs data. The specific mercury removal measurement campaigns are described below.

- Baseline mercury removal characterization for the host unit over a one to two week period.
- Injection of powdered activated carbon as a mercury sorbent on Miami Fort Unit 6. This campaign will run for one to two weeks, with target mercury removal rates of 55% and 80%.
- Injection of Amended Silicate sorbent in a parametric series of trials, to characterize performance in the host unit under a range of operating conditions. Target mercury removal rates will be 55% and 80% for this nominal two-week trial.

- Return to normal operations (no sorbent injection) for a period of one to two weeks to re-establish a baseline before initiation of a longer-term trial of Amended Silicates sorbent.
- Extended trial of Amended Silicate sorbent for a period of 30 days to evaluate performance and impact on balance of plant equipment.
- During each campaign, samples of fly ash mixed with mercury sorbent material will be extracted for use in tests to determine the effect of the sorbent on the use of the mixture as a pozzolan replacement in the manufacture of concrete.

Analysis

The use of CEMS results in the acquisition of a substantial quantity of data over the demonstration phase of the project. This information will be subject to a rigorous QA/QC review protocol, then archived to a project website where it will be accessible to project team members. This website will provide the home for a project database to be used to correlate mercury removal results with operating conditions of the host unit and performance of the particulate control equipment. The intent is to exploit the website to facilitate access to the data on a timely basis throughout the project. Specific activities to be carried out in the Analysis phase are noted below.

- Prepare and execute a QA/QC plan for the project.
- Establish a project website as a mechanism to share information and coordinate analysis of posted results.
- Create a project data base as a location to which all pertinent information on trials can be transferred for secure storage and analysis.
- Perform routine QA/QC screening of data and add qualified data to the project data base.
- Review and analyze trial data in the project data base to establish performance measures and trends in the data set.
- Analyze samples of fly ash plus sorbent to document the effect of sorbent addition on the use of fly ash as a cement replacement in concrete.
- Supply samples of fly ash to DOE contractor for leachate and mercury stability testing.
- Preparation of reports as required by the Cooperative Agreement.
- Preparation of technical papers that document the results of the trial demonstration.
- Overall management of the project with respect to scope, schedule, and budget.

Project activities are being carried out by technical personnel from the two parent companies of Amended Silicates, LLC. Jim Butz of ADA Technologies serves as Principal Investigator for the project with strong technical support from CH2M HILL and the other members of the consortium. Tom Broderick of ADA will serve as the lead engineer for the project team at the host site during the trial. Joe Hammond of CH2M HILL will direct the site engineering activity for the installation of the sorbent injection system and mercury CEMs.

Project Milestones

Amended Silicates, LLC has identified and is negotiating an agreement with a major material science company who will manufacture the 50 tons of Amended Silicate sorbent material for the demonstration. As a result of these negotiations the milestones dates shown below will change. Our potential manufacturing partner is currently reviewing production schedules at several plants to identify open dates during which preparation of the Amended Silicate™ sorbent could be complete. As a result, these milestone dates will be revised when the partnership between Amended Silicates, LLC and the sorbent manufacturer is completed.

- **April, 2004:** Cooperative agreement signed by Amended Silicates, LLC and project initiated.
- **August, 2004:** Subcontracts in place, project team coordinates schedule.
- **December, 2004:** Toll manufacturer selected for manufacture of Amended Silicate sorbent material to be used in trial.
- **January 2005:** Start installation of sorbent injection system and mercury CEMs at the host site.
- **March 2005:** Deliver sorbents to site (powdered activated carbon and Amended Silicate sorbent).
- **March 2005:** Begin injection trial.
- **June 2005:** Submit samples of fly ash plus sorbent for analysis of suitability for use in concrete.
- **July 2005:** Samples provided for leachate and stability testing.
- **August 2005:** Data analyses completed.
- **Second half of 2005 and 2006:** Presentation of results at technical conferences.

Project Management Activities to Date

This report documents Amended Silicates' project activities from October 1 through December 31, 2004. For this period, work consisted of tasks in the Preparation phase and Analysis phase. Activities focused on finalizing the QA/QC plan for the project and meeting with a prospective partner who will manufacture the Amended Silicates sorbent material for the demonstration. In addition, a short-term demonstration project of Amended Silicate sorbent for

mercury control completed in the summer of 2004 was reviewed to exploit the experience gained with the injection of Amended Silicates™ sorbent in an actual power plant environment.

Continuing discussions were held with the host site regarding planning for 2005 site activities. The project team agreed to schedule a meeting at the Miami Fort generating station early in the first quarter of 2005 to perform a walk-through of the site for all participating parties, including WKU and UNDEERC, who will be making the mercury measurements during the demonstration on Unit 6.

Amended Silicates, LLC initiated discussions in this quarter with an international chemical and catalyst manufacturing firm regarding the manufacture of the 50 tons of Amended Silicates sorbent needed for the demonstration. This organization is a strategic partner, whose expertise in large-scale manufacturing is critical in the process scale-up to the production of the demonstration batch of Amended Silicates sorbent. A nondisclosure agreement has been put on place and technical discussions were held, with an agreement for further discussions as technical questions are answered by the Amended Silicates engineering staff. This activity supports the project plan to select a sorbent manufacturing partner by the close of 2004.

The final version of the quality assurance and quality control plan was prepared by the Energy and Environmental Research Center of the University of North Dakota upon review and discussion of comments from the project principal investigator. The QA/QC plan was subsequently delivered to Amended Silicates in December. This QA/QC document will become a reference for use throughout the project to assure that the data obtained are reliable and useful in the analysis of the performance of the Amended Silicates sorbent in the planned demonstration. In the QA/QC plan UNDEERC outlined the equipment, chemicals, and procedures for two mercury measurement methods. The first method features a semi-continuous emissions monitors (SCEMS), to be provided by UNDEERC as part of their project subcontract. This procedure uses a cold vapor atomic absorption spectrometer (CVAAS) set up to measure light absorption at 253.7 nm for elemental mercury measurements. The second method is the well-established Ontario-Hydro mercury speciation method (ASTM D6784-02). This method is considered a reference method for the EPA rule making process. The QA/QC plan further outlines the analytical requirements for both methods as well as sample handling and custody requirements.

Experimental

In May of 2004 Amended Silicates, LLC completed a short-term demonstration of the use of one of its mercury sorbent formulations in a coal-fired power plant in Colorado. The host site, Xcel Energy's Arapahoe station unit 3, burns Powder River Basin subbituminous coal, and is equipped with a reverse-gas baghouse for particulate control, and also features a dry sorbent injection system for reduction of SO_2 emissions. We were able to use the previously installed injection system for the addition of Amended Silicates sorbent for mercury control. A second series of trial injections were made to gather data on the performance of powdered activated carbon in the host unit for comparison purposes. Samples of fly ash plus sorbent were extracted from the baghouse and sent to Boral Materials Technologies, Inc. for evaluation of their use as a cement replacement in the preparation of concrete. The analysis of the results for that short-term

test were completed in September, and a final report was prepared and submitted to Xcel Energy and EPRI, who provided co-funding for the project.

The Arapahoe trial final report was reviewed in detail by the Amended Silicates project technical staff to leverage valuable experience with Amended Silicates sorbent in preparation for the Miami Fort 6 demonstration. ADA Technologies and CH2M HILL prepared a comprehensive test plan for the Arapahoe trial that will become a template for a similar document needed for the Miami Fort 6 demonstration. The Arapahoe trial also offered the opportunity to develop and refine a sampling protocol to obtain samples of mixed fly ash plus sorbent from the hoppers of the Unit 3 baghouse. We will gather similar samples from the ESP hoppers at Miami Fort 6 for use in evaluation of the properties of the sampled material in the preparation of concrete. Further, the mercury measurement technique employed at Arapahoe featured the use of mercury continuous emissions monitors supplied and operated by Apogee Scientific. The Arapahoe trial allowed us to observe the response of the semi-continuous emissions monitors (SCEMS) to the injection of Amended Silicates sorbent. We discovered that the Amended Silicates sorbents require a longer period of time to reach equilibrium after initiation of injection - at least several hours, as compared to about 30 minutes to one hour for powdered activated carbon in the same generating unit. This information will prove valuable in preparing the detailed test plan to be followed in the demonstration at Miami Fort 6.

Results and Discussion

In the spring of 2004, ADA performed the first full-scale evaluation of Amended Silicate sorbent at Xcel Energy's Arapahoe power plant in Denver, Colorado. The goal of the project was to show that mercury control using Amended Silicate sorbents is feasible at a commercial scale and to gather data to support the estimation of costs for mercury control. The injections tests were conducted on Unit 3, a 44 MW PRB coal-fired unit equipped with a reverse air baghouse and a dry sodium injection system for SO_2 removal. The dry sodium injection system was used to inject the Amended Silicate™ sorbent material into the flue gas duct with minimal modifications.

Early in this full-scale injection trial, ADA became aware that the operation of the boiler dramatically affected vapor-phase mercury levels in the flue gas; measured mercury concentrations varied from a few micrograms per normal cubic meter to over 15 micrograms per normal cubic meter, depending on the excess air condition of the boiler. Eventually, plant operators were instructed to adjust combustion air rates to the boiler to minimize the carbon monoxide levels in the flue gas. This operating condition maximized vapor-phase mercury levels in the flue gas for testing purposes. Two different Powder River Basin sub-bituminous coals were burned during the injection trial, which also affected vapor-phase mercury levels. Mercury analyses of the coals showed differences as well, with measured mercury content of 43 and 71 ppb for the two different coals.

Each trial case required fly ash and coal samples to perform material balance calculations. Fly ash LOI analytical results served as a useful parameter to follow fly ash deposition in the various baghouse compartments. Real-time vapor-phase mercury measurements were especially useful providing information regarding total mercury removal as a function of sorbent injection rates and also allowed us to quantify the amounts of vapor-phase

total and elemental mercury in the flue gas entering and exiting the baghouse compartment. The mercury measurements provided data that showed mercury was converted from elemental mercury to an oxidized form of mercury as the flue gas passed through the fly ash layer on the fabric filters. ADA came away from the tests with a more detailed understanding of plant operations, mercury analysis, and data processing for injection tests. In this trial, ADA gained valuable experience to be incorporated in planning and execution of the upcoming full-scale sorbent injection trial at Cinergy's Miami Fort power plant.

In most any process delivery system, the simpler it is, the easier and more reliable it is to operate. ADA will apply this principle to the sorbent injection system. In the Arapahoe trial, sorbent material was pneumatically conveyed to the injection lances using an eductor and compressed air. The sorbent was metered into the conveying air stream using a screw feeder with an open top hopper. Operation of the eductor was nearly flawless. However, occasionally bits of plastic mixed in the sorbent material would partially plug the throat of the eductor. The eductor was installed so that it was quite accessible which enabled operators to service the eductor when needed. The screw feeder sat on a platform scale to monitor weight loss as a function of time. The scale data was logged directly into an Excel spreadsheet, which simplified data management. Real-time weight loss data was used to calculate sorbent feed rates, and adjustments to the screw speed were easily made in real-time to maintain a constant sorbent injection rate. The sorbent injection system planned for the Cinergy trial is a rental unit from Norit Carbon. This rental unit incorporates the aforementioned features and should provide trouble-free operation throughout these tests.

One of the most significant aspects of the evaluation of mercury sorbents in field demonstrations is to maintain consistent mercury levels, as best possible, so that data derived from different trial injection rates can be compared on a consistent basis. At Arapahoe, changes in boiler operation were found to dramatically affected vapor-phase mercury concentrations in the flue gas. Two parameters were seen to correlate strongly with changes in mercury concentration: carbon monoxide (CO) level in the flue gas, and average flue gas flow rate at the stack. Our observation was that when mercury levels were high, carbon monoxide levels were lower and combustion gas flow rates were higher compared to values of these process parameters when mercury levels were low. Once these correlations were discovered, it was possible for operators to tailor boiler operations to minimize CO levels by increasing the air flow to the boiler, with a subsequent increase (and stabilization) of vapor-phase mercury concentration in the flue gas (See Figure 1).

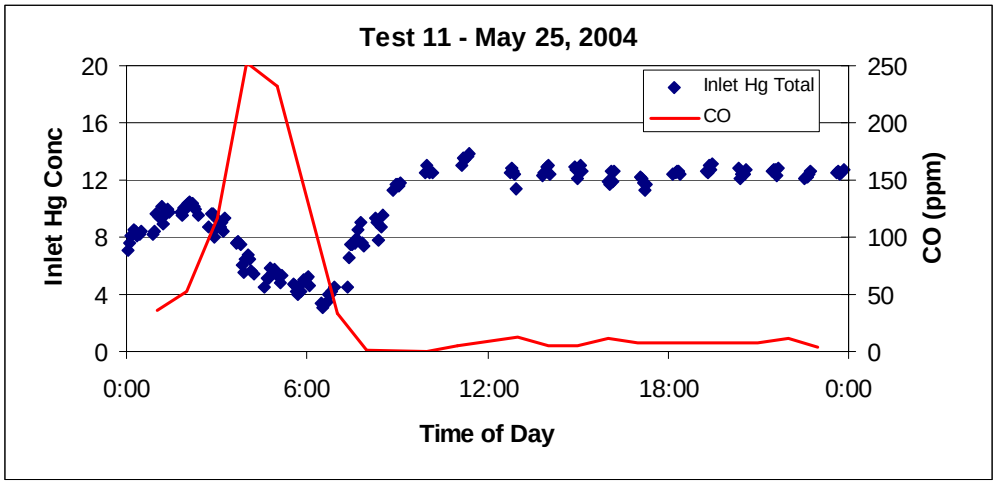

Figure 1 - Correlation of Vapor-Phase Mercury Concentration with Boiler CO Levels

The chemistry between vapor-phase mercury and flue gas constituents (gaseous and particulate matter) is complicated and not well understood. At Arapahoe, flue gas was sampled at three locations in the flue gas train; upstream of the sorbent injection port, downstream of the injection port at the inlet to the baghouse, and at the outlet of the baghouse. The mercury analyzer had the capability to measure total mercury and elemental mercury in the gas stream. On several occasions, the inlet and outlet of the baghouse were monitored overnight for total and elemental mercury. At the Arapahoe facility, the mercury at the inlet to the baghouse was primarily elemental mercury (>85%), but at the outlet of the baghouse more than 88% of the mercury in the flue gas was reported as oxidized mercury. The conversion of elemental mercury to oxidized mercury is thought to be catalyzed by the fly ash material on the fabric filters. Similar data will be gathered during the Cinergy trials. Mercury measures will be taken upstream of the sorbent injection port to quantify and establish the form of mercury (elemental versus oxidized). A second mercury analyzer will be installed downstream of the electrostatic precipitator (ESP) to measure the mercury concentration and the form of the mercury to see if the vapor-phase mercury is transformed by the system or in the presence of the sorbent materials.

The amount of mercury in coal is extremely variable not only among different types of coals but can also vary substantially for a given coal province such as the Powder River Basin (PRB). Even though the two coals used in the Arapahoe tests were both PRB coals, the mercury concentrations in these two coals were vastly different. Coal from the Antelope mine was a low mercury coal with a concentration 0.033 mg/kg (as received). In comparison, the second coal used during the injection tests was from the Black Thunder mine. This coal had twice the mercury with a concentration of 0.071 mg/kg (as received). Coal samples will be taken throughout the test period at Cinergy especially when a coal change occurs.

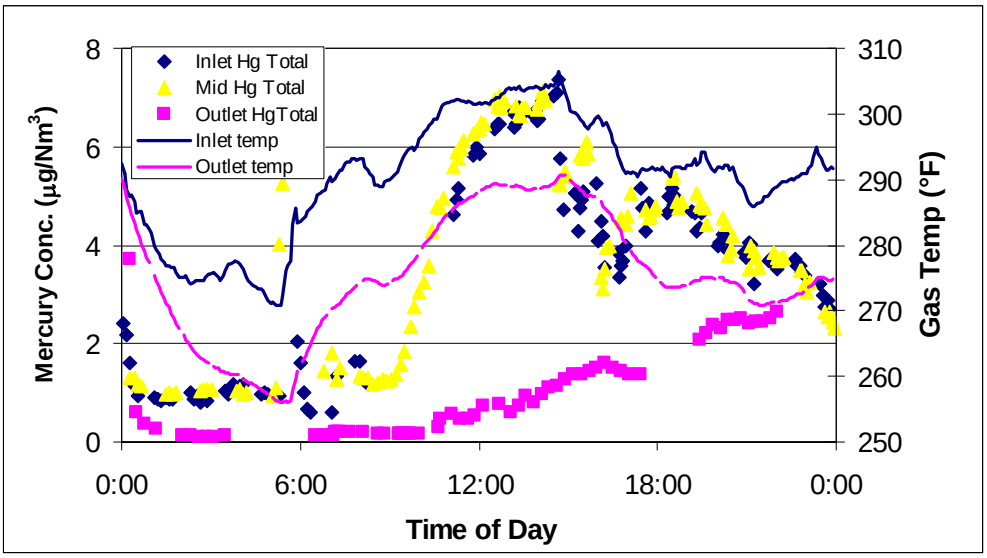

Figure 2 - Correlation of Flue Gas Temperature and Mercury Concentration

Conclusions

Several conclusions from the Arapahoe short-term trial are important and significant in the planning now under way for the demonstration at Miami Fort Unit 6.

- Amended Silicates sorbent can be metered and transported to a flue gas stream using conventional powder handling equipment, similar to that used for activated carbon. Thus the plan to lease Norit's Porta-PAC injection system for use at Miami Fort is validated.
- Amended Silicates sorbent was effective in removing mercury from a coal-fired flue gas stream in a plant burning PRB sub-bituminous coal and equipped with a baghouse for particulate control.
- Samples of neat fly ash and fly ash mixed with Amended Silicates sorbent collected from the baghouse hopper showed identical properties when tested for their impact on their use as a cement replacement. This verifies one of the major market advantages of Amended Silicates sorbent, and reinforces Amended Silicates, LLC's interest in the completing the Miami Fort demonstration.

References

None.

Bibliography

None.

List of Acronyms and Abbreviations

ASL	Amended Silicates, LLC
ADA	ADA Technologies, Inc.
CEM	Continuous Emissions Monitor
CFD	Computational Fluid Dynamics
CH2	CH2M HILL
DOE	Department of Energy
EPA	Environmental Protection Agency
EPRI	Electric Power Research Institute
ESP	Electric Static Precipitator
NETL	National Energy Technology Laboratory
QA/QC	Quality Assurance/Quality Control
SCEM	Semi- Continuous Emissions Monitor
UNDEERC	University of North Dakota's Energy and Environmental Research Center
US	United States
WKURF	Western Kentucky University Research Foundation

Planned Activities for Next Quarter

The next quarter of the project will see continued efforts in the design and planning phases, including the following elements:

- Completion of an agreement to secure a major manufacturer of sorbent and catalyst materials as a strategic partner. This partner will subsequently manufacture and supply the 50 tons of Amended Silicates sorbent material needed for the trial at Miami Fort Unit 6.
- Completion of a host site agreement with Cinergy. ADA will lead this effort.
- Preparation of the test plan and associated sampling protocols. ADA Technologies to lead this effort.
- Prepare reports to meet requirements of the cooperative agreement. ADA Technologies to complete these reports.
- Conduct a coordinated site visit to bring together all participants (Cinergy, ADA, CH2M HILL, UNDEERC, and WKU) at the host site for a walk-through and detailed discussion of locations for installation of sorbent injection equipment and mercury measurement instrumentation. ADA and Cinergy to coordinate planning for this meeting.
- Revise the project schedule to reflect manufacture of the 50 tons of Amended Silicate™ sorbent by the new strategic partner.
- Prepare and deliver a briefing to the DOE on updated plans and schedule for the Miami Fort 6 demonstration of Amended Silicates sorbent for mercury control.